

Amendments to the Claims

The following Listing of Claims replaces all prior versions, and listings, of claims in the application.

Listing of Claims:

Claim 1 (currently amended): A method for estimating ~~the~~ a displacement of at least one an object ~~with respect to~~ appearing in a first image and a second image, ~~wherein the object is fixed within each of the first image and the second image, the method comprising:~~
~~generating~~ ascertaining a respective candidate location of the object in each of a plurality of search regions ~~within said in the second image based on a plurality of search parameters;~~
~~determining an object displacement estimate for each of the search regions, determining a~~ respective candidate displacement vector relating the respective candidate location of the object and a location of the object in the first image;
~~measuring the validity of each of the plurality of estimated object~~ displacements associating a respective confidence value with each of the candidate displacement vectors; and
~~comparing the validity measurements to determine the best object displacement estimate;~~
~~wherein the best object displacement~~
~~estimate~~
~~corresponds to~~ providing the estimated displacement of the object based at least in part on an evaluation of the confidence values.

Claim 2 (currently amended): A method as defined in Claim 1, wherein the ascertaining comprises determining the search regions based on search parameters ~~are~~ selected from the group that consists of search region dimensions, motion model trajectory, search range and step size.

Claim 3 (currently amended): A method as defined in Claim 2, wherein ~~generating a plurality of~~ determining the search regions comprises:

~~selecting~~ determining a range of displacement of the object between the first image and the second image;

selecting step size for traversing the range within the second image; and

determining at the plurality of search regions within the second image based upon the selected step size and the selected range of displacement.

Claim 4 (currently amended): A method as defined in Claim 2, further ~~including~~ comprising:

~~comparing~~ evaluating each of said ~~measurements of validity~~ the confidence values with respect to a cutoff value condition;

in response to a determination that none of confidence values satisfies the cutoff condition, selecting at least one new search parameter and repeating the ascertaining, the determining of the respective candidate displacement vectors, and the associating based on the selected new search parameter in the event that none of the measurements of validity exceeds the cutoff value;

~~determining apparent displacement in accordance with the at least one new parameter.~~

Claim 5 (currently amended): A method as defined in Claim 1, wherein the ascertaining comprises determining the search regions such that adjacent ones of the search regions are related to overlap one another.

Claim 6 (currently amended): A method as defined in Claim 5~~1~~, wherein the ascertaining comprises determining the search regions such that the search regions are related to one another by a preselected motion model ~~ie~~ along a path across the second image.

Claim 7 (currently amended): A method as defined in Claim 2~~1~~, wherein the ascertaining comprises determining the search regions based on a selected ~~the number of search regions is related to~~ step size.

Claim 8 (canceled)

Claim 9 (currently amended): A method as defined in Claim 1, wherein ~~determining an object displacement estimate further~~the ascertaining comprises performing a multiresolution analysis to determine the respective candidate object locations.

Claim 10 (currently amended): A method as defined in Claim 1, wherein ~~determining an object displacement estimate further~~the ascertaining comprises performing an optical flow analysis to determine the respective locations of the object in the search regions.

Claim 11 (currently amended): A method as defined in Claim 1, wherein the associating comprises for each of the candidate displacement vectors~~measuring validity further comprises~~ performing an image reconstruction and correlation analysis based on the candidate displacement vector to determine the associated confidence value.

Claim 12 (currently amended): A method as defined in Claim 1, wherein the associating comprises for each of the candidate displacement vectors~~measuring validity further comprises~~ performing a residual error analysis based on the candidate displacement vector to determine the associated confidence value.

Claim 13 (currently amended): A system for estimating ~~the a~~ displacement of ~~at least one~~an object ~~with respect to appearing in~~ a first image and a second image, ~~wherein the object is fixed within each of the first image and the second image, the system comprising, in combination:~~

a) ~~a search region generator adapted to receive the first and second images and selected search parameters as inputs and to provide a plurality of search regions in response;~~

b) ~~an object displacement estimator adapted to receive the plurality of search regions and to provide a plurality of object displacement estimates in response~~operable to

ascertain a respective candidate location of the object in each of a plurality of search regions in the second image, and

for each of the search regions, determine a respective candidate displacement vector relating the respective candidate location of the object and a location of the object in the first image;

~~e)-a validity measurer adapted to receive the plurality of object displacement estimates and to provide a plurality of validity measurements in response~~operable to associate a respective confidence value with each of the candidate displacement vectors; and

~~d)-a validity comparator adapted to receive the plurality of validity measurements and to provide a best object displacement estimate in response~~operable to provide the estimated displacement of the object based at least in part on an evaluation of the confidence values.

Claim 14 (currently amended): A system as defined in Claim 13, further comprising a search region generator operable to wherein:

~~a)-determine the search regions based on~~the search parameters include comprising search range and step size; and

~~b)-the search region generator is arranged to determine the plurality of search regions within the second image based upon the step size and the selected range of displacement.~~

Claim 15 (currently amended): A system as defined in Claim 13, wherein the validity comparator is ~~arranged to compare each of the validity measurements to a predetermined cutoff value~~operable to evaluate each of the confidence values with respect to a cutoff condition.

Claim 16 (currently amended): A system as defined in Claim 15, further comprising a search region generator, wherein in response to a determination that none of confidence values satisfies the cutoff condition:

~~the validity comparator is arranged to determine the best validity measurement that exceeds the predetermined cutoff value~~the search region generator is operable to select at least one new search parameter and determine new search regions in the second image based on the selected new search parameter;

the object displacement estimator is operable to

ascertain a respective new candidate location of the object in each of the new search regions, and
for each of the new search regions, determine a respective new candidate displacement vector relating the respective new candidate location of the object and a location of the object in the first image; and
the validity measurer operable to associate a respective new confidence value with each of the new candidate displacement vectors.

Claim 17 (currently amended): Apparatus for estimating ~~the a~~ displacement of ~~at least one~~ an object ~~with respect to appearing in~~ in a first image and a second image, ~~wherein the object is fixed within each of the first image and the second image comprising, in combination at least one~~ data processing component operable to perform operations comprises:

ascertaining a respective candidate location of the object in each of a plurality of search regions in the second image~~a) means for generating a plurality of search regions within the second image based on selected search parameters;~~

for each of the search regions, determining a respective candidate displacement vector relating the respective candidate location of the object and a location of the object in the first image~~b) means for determining an object displacement estimate for each of the search regions;~~

associating a respective confidence value with each of the candidate displacement vector~~c) means for measuring the validity of each of the plurality of estimated object displacements; and~~

providing the estimated displacement of the object based at least in part on an evaluation of the confidence values~~d) means for comparing the validity measurement to determine a best object displacement estimate.~~

Claim 18 (new): A method as defined in Claim 1, wherein the providing comprises selecting the candidate displacement vector associated with a highest one of the confidence values as the estimated displacement of the object.

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Claim 19 (new): A system as defined in Claim 13, wherein the validity comparator is operable to select the candidate displacement vector associated with a highest one of the confidence values as the estimated displacement of the object.

Claim 20 (new): Apparatus as defined in Claim 17, wherein the at least one data processing component is operable to select the candidate displacement vector associated with a highest one of the confidence values as the estimated displacement of the object.